

I claim:

1. A method for trimming a newly-installed sleeve liner after the liner is positioned in a cylinder bore of a combustion engine component, comprising steps of:

providing a trimmer including a trimming tool adapted to trim a protruding end of the newly-installed sleeve liner and including a tool holder operably supporting the trimming tool, the tool holder having a first section shaped and adapted to stably engage the combustion engine component and to receive the protruding end of the sleeve liner and also having a second section operably supporting the trimming tool for rotation and for axial movement toward a selected cylinder bore when the tool holder is attached to the combustion engine component;

setting a stop mechanism to limit the trimming tool to cutting only down to a flush condition on the engine component;

securing the tool holder to a face of the engine component; and

operating the trimming tool to shave off the protruding end.

2. The method defined in claim 1, wherein the step of operating the trimming tool includes shaving the protruding end of the sleeve liner to a condition flush with a top surface of the engine component.

3. The method defined in claim 1, wherein the stop mechanism includes a thrust bearing on one of the trimming tool and the holder that engage to limit axial motion of the trimming tool, and including a step of engaging the thrust bearing to limit the axial motion of the trimming tool.

4. The method defined in claim 1, wherein the step of securing includes aligning an axis of rotation of the trimming tool with an axial centerline of the cylinder bore.

5. The method defined in claim 1, including a step of suctioning away debris during the step of operating the trimming tool.

6. The method defined in claim 1, wherein the trimming tool includes a cutting head and the holder defines a wall defining a pocket for receiving and housing the cutting head, and the method includes attaching a suctioning device to the wall and operating the suctioning device.
7. The method defined in claim 6, wherein the suctioning device includes an inlet passageway and an outlet passageway both configured to cause a suction when air is passed therethrough, and including a step of motivating air through the inlet and outlet passageways.
8. The method defined in claim 7, wherein the inlet and outlet passageways are aligned to form a continuous passageway that extends at a tangential angle to the pocket, with an intermediate portion of the continuous passageway opening into the pocket and with a shaped orifice in the continuous passageway to cause air flow resulting in a vacuum.
9. The method defined in claim 1, wherein the stop mechanism includes a stop on one of the trimming tool and the tool holder and is adjustable, and the other of the trimming tool and the tool holder has a mating surface that abuts the stop to limit longitudinal movement of the trimming tool relative to the tool holder, and including a step of adjusting the stop to cause a longitudinal movement of a cutter on the trimming tool to stop cutting when the protruding end of the sleeve liner is trimmed to a condition flush with a top of the material forming the selected bore cylinder.
- 5 10. The method defined in claim 1, wherein the tool holder includes a tie-down device comprising a clamp plate engaging the first section, the clamp plate including first holes, and also includes bolts adapted for engaging mating threaded holes in the engine component, and wherein the step of securing the tool holder includes extending the bolts through the threading the first holes and into threaded engagement with the threaded holes.
11. The method defined in claim 1, wherein the trimming tool has a drive shank adapted for attachment to a hand-held manually-operated drill, and wherein the step of operating the trimming tool includes rotating the trimming tool by using the drill.

12. The method defined in claim 11, wherein the second section of the tool holder has a bore neck, and the trimming tool includes a shaft that is rotatable and also axially shiftable in the bore neck, and wherein the trimming tool further includes a coupler that permits misalignment of the drill and the shaft while permitting forced rotation and translation of the trimming tool.

13. The method defined in claim 1, wherein the trimming tool includes a cutter rotatable about an axis of rotation, and the step of securing includes aligning the axis of rotation with a centerline of the cylinder bore so that when the cutter is rotated to trim an end of the liner, any score lines formed by the cutter on the trimmed end extend circumferentially and do not crisscross radially across the trimmed end.

14. The method defined in claim 1, including a step of providing a cylinder bore plug shaped to fill a cross-sectional area of the selected cylinder bore to prevent loose material and debris from falling into the selected cylinder bore during the step of operating the trimming tool, and including a step of positioning the cylinder bore plug in the selected cylinder bore.

15. A method of trimming a newly-installed sleeve liner after the liner is positioned in a cylinder bore of a combustion engine component, comprising steps of:

providing a trimming tool adapted to shave off a protruding end of the newly-installed sleeve liner;

5 providing a tool holder with a first section shaped and adapted to stably engage the combustion engine component, and a second section operably engaging the trimming tool and configured to hold the trimming tool for rotation over a selected cylinder bore when the tool holder is attached to the combustion engine component; the second section of the tool holder having a bore neck, and the trimming tool including a shaft that is rotatable and also movable
10 axially in the bore neck, and wherein the trimming tool includes a stop incorporating a thrust bearing that engages a top of the neck to limit longitudinal movement of the trimming tool;
securing the tool holder to the engine component; and

operating the trimming tool to cut off the protruding end of the sleeve liner until the thrust bearing and the stop are engaged and stop further cutting.

16. A method of trimming a newly-installed sleeve liner after the liner is positioned in a cylinder bore of a combustion engine component, comprising steps of:

providing a trimming tool adapted to shave off a protruding end of the newly-installed sleeve liner, the trimming tool having a drive shaft and having an enlarged cutter head

5 connected to the drive shaft and further having a stop; and

providing a tool holder having a bore neck operably supporting the drive shaft of the trimming tool for rotation and for limited longitudinal movement, with the longitudinal movement being limited by engagement of the stop against the tool holder in at least one

10 direction, and the tool holder further having an enlarged pocket for receiving the cutter head and for positioning the cutter head adjacent a protruding end of the newly-installed sleeve liner when the tool holder is supported on the combustion engine component, the tool holder being configured and sized for manual manipulation and operation and having an end shaped and adapted to stably engage the combustion engine component while the trimming tool is being operated manually;

15 wherein the tool holder and trimming tool include a thrust bearing and a stop surface thereof, and the stop surface engages the thrust bearing to limit longitudinal movement of the trimming tool relative to the tool holder; and

operating the trimming tool until the stop limits further longitudinal movement of the trimming tool.

17. A method of repairing a combustion engine component with a damaged cylinder bore, where a friction-fit sleeve liner of bearing material is positioned in the damaged cylinder bore to repair the cylinder bore, comprising steps of:

providing an apparatus including a trimming tool having a cutter adapted to shave off a
5 protruding end of the newly-installed sleeve liner, the cutter being rotatable about a centerline that is adapted to be positioned collinearly with a centerline of the cylinder bore; the apparatus

also including a tool holder for stably engaging the engine component and for operably supporting the trimming tool;

10 attaching the trimming tool to the combustion engine component, including holding the trimming tool for rotation over the selected cylinder bore with the centerline of the cutter aligned with the centerline of the cylinder bore; and
rotating and extending the trimming tool to trim a protruding end of the liner.

18. The method defined in claim 17, including steps of:

providing a suction device on the tool holder and a collection bag on the suction device; operating the suctioning device to draw away debris during the stop of rotating and extending, including collecting the debris.

19. The method defined in claim 18, including steps of

providing a coupler atop the trimming tool and providing a drill attached to the coupler; and

5 wherein the step of rotating and extending the trimming tool includes operating the drill to rotate and axially extend the trimming tool, with the coupler compensating for misalignment of a centerline of rotation of the drill and the centerline of rotation of the trimming tool.

20. The method defined in claim 17, including steps of:

providing a plug for filling a cross-sectional area of the cylinder bore, and inserting the plug into the bore to catch debris caused by the step of rotating and extending the trimming tool to trim the protruding end.